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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,501	06/27/2001	Jun Akikusa	SHG-0047	8796

23353 7590 02/20/2003

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EXAMINER

ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 02/20/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/891,501		AKIKUSA ET AL.	
	Examiner		Art Unit	
	Raymond Alejandro		1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 2 is objected to because of the following informalities: the general formula (1) recites "Ln", however, it is noted that none of the elements of the Periodic Table can be chemically identified as Ln. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2 and 4-6 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The language "an amount of Co in said first electrolyte layer is 0 or 80 % or less with respect to an amount of Co in said second electrolyte layer" in claims 2 and 4 is unclear, thereby rendering the claim vague. Further, the foregoing language is not defined by the claim, and the specification does not provide a standard for ascertaining the requisite degree. The specific molar range or magnitude that the instant claims intend to recite is not sufficiently clear.

5. Claim 4 recites the limitation "said lanthanum-gallate oxide" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Hashimoto et al 6287716.

The instant application is directed to a solid oxide fuel cell wherein the disclosed inventive concept comprises the specific electrolyte layers. Other limitations include the specific lanthanum-gallate oxide; the thickness and the CO amount.

As to claims 1-4:

3. A solid oxide fuel cell having a laminate structure, comprising:

- an air electrode layer;
- a fuel electrode layer; 30
- a solid electrolyte layer interposed between said air electrode layer and said fuel electrode layer; and
- an intermediate layer interposed between said electrolyte layer and said air electrode layer;

wherein said electrolyte layer comprises a material specified by $\text{La}_{1-a}\text{A}_a\text{Ga}_{1-(b+c)}\text{B}_b\text{Co}_c\text{O}_3$, said air electrode layer comprises a material specified by $\text{La}_{1-d}\text{A}_d\text{CoO}_3$, and said intermediate layer comprises a material specified by $\text{La}_{1-e}\text{A}_e\text{Ga}_{1-(f+g)}\text{B}_f\text{Co}_g\text{O}_3$, and wherein A is at least one element selected from the group consisting of 35
 Sr and Ca, B is at least one element selected from the 40
 group consisting of Mg, Al, and In, and $0.05 \leq a \leq 0.3$, $0 \leq b$, $e \leq 0.3$, $0 \leq c \leq 0.15$, $b+c \leq 0.3$, $0 \leq d \leq 0.5$, $0 \leq f \leq 0.15$, $0.15 < g \leq 0.3$, and $f+g \leq 0.3$;

and wherein a composition continuously changes in each 45
 of an interface between said intermediate layer and said electrolyte layer and an interface between said intermediate layer and said air electrode layer.

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As for claim 5:

It is disclosed that the thickness of the electrolyte layer is preferably within a range of 10-200 μm (col 11, lines 55-59); and the thickness of the intermediate layer is preferably within a range from 10-100 μm ; more preferably 20-90 μm ; most preferably 30-80 μm (col 13, lines 50-60).

With respect to claim 6:

It is disclosed that the composition continuously changes in each of an interface between said intermediate layer and said electrolyte layer and an interface between said intermediate layer and said air electrode layer (claim 3).

Thus, the claims are anticipated.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (703) 306-3326. The examiner can normally be reached on Monday-Thursday (8:30 am - 7:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700